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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,754	10/18/2005	Makoto Iida	125664	5979

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OLIFF & BERRIDGE, PLC  
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ALEXANDRIA, VA 22320

EXAMINER
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MALEKZADEH, SEYED MASOUD

ART UNIT	PAPER NUMBER
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1722

MAIL DATE	DELIVERY MODE
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09/20/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/553,754

Applicant(s)

IIDA, MAKOTO

Examiner

SEYED MALEKZADEH

Art Unit

1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 28 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 10-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### **Response to Amendment**

Claims 10-27 are pending.

Claim 28 is cancelled.

In view of the amendment, filed on June 28, 2007 following rejections/ objections are withdrawn from the previous office action mailed on 03/30/2007 for the reason of record.

- Objection of specification
- Rejection of claim 28 under 35 U.S.C 102(b) as being anticipated by lida et al (US 6,334,896) because claim 28 has been cancelled

In view of the amendment, filed on June 28, 2007 following rejections/ objections are maintained from the previous office action mailed on 03/30/2007 for the reason of record. The basis of these rejections are the same as given in previous office action.

- Rejection of claims 10-27 under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 6,334,896) in view of Fujikawa et al. (US 5,685,907)

### **Response to argument**

Applicant's arguments filed on June 28, 2007 have been fully considered but they are not persuasive.

Applicants argue that neither Iida et al. (US 6,334,896) nor Fujikawa et al. (US 5,685,907) teach pulling a seed crystal from a raw material melt, wherein when a pulling rate of pulling a single crystal is defined as  $V$  (mm/min), a temperature gradient at a solid-liquid interface is defined as  $G$  (K/mm) and a highest temperature at an interface between a crucible and a raw material melt is defined as  $T_{\max}$  ( $^{\circ}\text{C}$ ), at least, a range of a value of  $V/G$  ( $\text{mm}^2 / \text{K} \cdot \text{min}$ ) including a desired defect region and/or a desired defect-free region is determined according to the  $T_{\max}$  ( $^{\circ}\text{C}$ ), as recited in claim 10.

This is not found persuasive because applicants' attention is drawn to the point that Iida et al. (US 6,334,896) or Fujikawa et al. (US 5,685,907) has not been used alone. Combined teaching of Iida et al. ('896) and Fujikawa et al. ('907) clearly teach a method for producing a single crystal by Czochralski method with pulling a seed crystal from a raw material melt, wherein when a pulling rate of pulling a single crystal is defined as  $V$  (mm/min), a temperature gradient at a solid-liquid interface is defined as  $G$  (K/mm) and a highest temperature at an interface between a crucible and a raw material melt is defined as  $T_{\max}$  ( $^{\circ}\text{C}$ ), at least, a range of a value of  $V/G$  ( $\text{mm}^2 / \text{K} \cdot \text{min}$ ) including a desired defect region and/or a desired defect-free region is determined according to the  $T_{\max}$  ( $^{\circ}\text{C}$ ), as recited in claim 10. (See Iida et al. ('896) [lines 64-67, column 2 and lines 1-14, column 3]; and further Fujikawa et al. ('907) [lines 35-42, column 10])

Further applicants argue that Iida et al. ('896) and Fujikawa et al. ('907) are not combinable because Iida et al. ('896) teaches silicon single crystal produced by the Czochralski method. However, Fujikawa et al. ('907) teaches producing a compound single crystal by the vertical gradient freeze (VGF) solidifying method.

This is not found persuasive because Fujikawa et al. ('907) clearly teaches preparation of a single crystal various methods have been proposed including Czochralski method and vertical gradient freeze (VGF) method (See lines 30-40, column 1) which both methods require a crucible, a seed, and heater and single crystal is grown by solidification of melted source material which is in contact with the seed crystal (See lines 42-49, column 1). Therefore, manufacturing method of a single crystal by Czochralski method and vertical gradient freeze (VGF) method have comparable technical functions. Thus, combined teaching of Iida et al. ('896) and Fujikawa et al. ('907) clearly teach all the limitations of claims 10-27.

Therefore, rejections of claims 10-27 are maintained.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Masoud Malekzadeh whose telephone number is 571-272-6215. The examiner can normally be reached on Monday – Friday at 8:30 am – 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra N. Gupta can be reached on (571) 272-1316. The fax number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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